ATTACHMENT 14

FUME MANAGEMENT

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1.0 Introduction

This attachment addresses the management of fumes as mandated by RCRA and the State of Utah. There are two separate and distinct fume systems associated with the incinerator: the closed vent system (i.e., the combustion air system and the backup carbon adsorption system) and the hydrocarbon vent system. Each will be addressed below with their components outlined. Analyzers and interlocks described below are detailed on drawings D-800-PI-316, D-800-PI-317, D-800-PI-410, and D-800-PI-411 in Attachment 10. There are also other vent systems for other storage and processing operations at the facility. These are discussed in section 4.

2.0 Closed Vent System

The closed vent system (i.e., the combustion air system and the backup carbon system) collects ventilation air from sources that handle waste in the aggregate with greater than 140°F flash point (or, in the case of the direct burn tanker vacuum decant operations, the vent gas is diluted to below 60% LEL prior to entering the closed vent system). These sources include the bulk solids building, the shredder, the apron feeder, the small sludge tank, and the direct burn tanker vacuum pump. The destination of these fumes is to the combustion air fans under normal operating conditions. When the combustion air fans are off, or whenever the ABC temperature is lower than 1400°F for more than ten minutes, the fumes report to the backup carbon adsorption system (described in section 2.5).

The air ventilated from these sources is always exhausted either through the combustion air system to the incinerator or to the backup carbon system. During normal operations, the bulk solids building, the shredder, the apron feeder, the small sludge tank, and the diluted vent gas from the direct burn tanker vacuum decant operations (when operating) will be vented to the kiln and ABC and the backup carbon adsorption system will be isolated. During backup operations (when the combustion air fans are off or when the ABC is operating at a temperature less than 1400°F for more than ten minutes) the bulk solids building, shredder and small sludge tank will be vented to the carbon adsorption system, and the kiln and ABC will be isolated from these sources and will draw combustion air from the 48 inch plenum through the atmospheric vents. The vent from the apron feeder will be closed (i.e., damper HV4050 will be closed) and any venting of this device will be through the bulk solids building to the carbon adsorption system. The direct burn tanker vacuum decant operations will not occur during backup operations.

Inspection ports are located in the kiln and ABC combustion air ducts. These will be checked for dusting and liquid accumulation at least once per week. In-line LEL instruments monitor the ducts (north and south side of kiln combustion air duct, and north and south ABC combustion air ducts) to determine hydrocarbon levels. The LEL instruments are tied to the control computer (WDPF). The process flow is shown in drawing D-034-PF-603 in Attachment 10. The combustion air system and the backup carbon system are shown in drawings D-800-PI-410, and D-800-PI-411 in Attachment 10. The liquid trap for the vacuum decant system in the drive through direct burn station is equipped with a high level sensor which will alarm locally and in the control room when the liquid level reaches one foot. The operator will then stop the vacuum decant system and drain the liquid from the trap.

The closed vent system between the bulk solids building, the shredder, the apron feeder, the small sludge tank and the inlet to the ID fans (both kiln/ABC combustion air fans and the carbon adsorption system ID fan) will be operated at below atmospheric pressure. It will have at least one magnehelic pressure gauge installed in the vent system to verify a draft condition in the combustion air ductwork. There will be a flow switch in the combustion air ductwork that will generate a digital signal that will be recorded in PI that can also be used to verify that the closed vent system is operated at a pressure less than atmospheric. The duct work sections between the carbon adsorption system ID fan (K-401) and the carbon adsorbers, between the combustion air fans (K-101 and K-102A/B) and the incinerator, and between the vacuum pump dilution air fan (K-407) and the combustion air plenum will be operated at a positive pressure. These sections of the vent system will be monitored annually to ensure that there are no VOC emissions greater than 500 ppm above background.

2.1 Bulk Solids Building

Dirt and debris are typical waste in bulk solids. Air is drawn from the bulk solids building by the combustion air fans during normal plant operations. The vent system consists of ducting from bulk solids to the air plenum that reports to combustion air fans. The system is activated whenever the combustion air fans are on and the temperature in the ABC is greater than 1400°F. In-line LEL instruments monitor the duct to determine hydrocarbon levels. The LEL instruments are tied into the kiln's control computer, the WDPF. Inspection ports in the ducting must also be checked for dusting and liquid accumulation at least once per week.

When the combustion air fans are off, or whenever the ABC temperature is lower than 1400°F for more than ten minutes, the fumes report to the backup carbon adsorption system.

The bulk solids building and associated vents will serve as the enclosure that is vented through a closed vent system to an enclosed combustion control device (or to the backup carbon adsorption system) in order for the bulk solids tanks to comply with Tank Level 2 controls specified in 40 CFR§264.1084(d)(5). The bulk solids building shall be operated in accordance with the criteria for a permanent total enclosure as specified in "Procedure T -- Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR§52.741, Appendix B. Testing to demonstrate that the bulk solids building meets these criteria will be done initially, and annually thereafter.

Tables 1 and 2 on pages 10 and 11 list the natural draft openings (NDOs) which are allowed in the bulk solids building during normal and backup operations respectively. Clean Harbors Aragonite will maintain the surface area of each of the NDOs at or below the specifications given in Table 1 (during normal operations) or Table 2 (during backup operations). However, in order to allow for time to seal openings for backup operations, the NDOs listed in Table 1 may be in place for periods of up to four hours while venting to the backup carbon adsorption system.

The doors to the bulk solids building must remain closed except when unloading waste into the tanks, managing waste with external equipment, emergencies, and maintenance activities. Doors must be closed as soon as possible (at least within 15 minutes) after unloading a truck or performing other activities for which the doors must be opened.

During normal operations, a minimum flow of 5300 acfm will be vented from the bulk solids enclosure at all times to maintain the required minimum flow velocity through the NDOs. Since this air combines with vent gas from the direct burn tanker vacuum pump and dilution air prior to being measured, the following will be implemented. The dilution air fan and/or damper will be configured to produce a maximum total flow of 5225 acfm to the combustion air plenum. This will be documented by manual measurements prior to operation, and the same configuration will be maintained during operation. To ensure a minimum flow from the bulk solids enclosure, the flow of combustion air will be maintained above 12,000 acfm when the vacuum pump/dilution air fan are operating and above 6775 acfm when they are not operating. This flow will be determined based on the combined flow measured by flow meters FIT1143, FIT1192, FIT1247, and FIT1015. Should there be a malfunction with one or more of these flow meters, four hours will be allowed for repair. These flows will be monitored and recorded at all times the fumes are being directed to the incinerator. The atmospheric air vents (HV4018 and HV4025) will be closed during normal operations. However, during emergency situations, HV4018 will modulate, if necessary, to maintain the LEL of the highest of sensors AIT4018A, B, C, or D below 25%. Any time HV4018 is not closed during normal operations will be recorded in the PI archiving system. The required minimum flow during backup operation will be determined by annually measuring the volumetric flow, corrected to standard conditions, by EPA Method 2 as required by "Procedure T -- Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR§52.741, Appendix B. An anemometer may be used in place of the pitot tube for determining the flow in the ducts. The carbon adsorption ID fan and dampers will have the same configuration during operation as during the most recent test. The minimum required flow, along with the documentation supporting this value, will be submitted to the Executive Secretary within fourteen days of completing the test.

2.2 Shredder

The shredder is located in the bulk solids building. In-line LEL instruments monitor the duct to determine hydrocarbon levels. The LEL instruments are tied into the WDPF. Inspection ports in the ducting must also be checked for dusting and liquid accumulation at least once per week.

The shredder is vented to the incinerator through the combustion air system during normal operations. During backup operations (when the combustion air fans are off or when the ABC is operating at a temperature less than 1400°F for more than ten minutes) the shredder will be vented to the carbon adsorption system. Damper HV4017 will be maintained between 5 and 25% open.

2.3 Apron Feeder

The apron feeder conveys material from bulk solids to the kiln. Air is drawn from the apron feeder to the combustion air system during normal operations.

The apron feeder, which is connected to the bulk solids building, does not function as part of the enclosure for the bulk solids tanks. Rather, the apron feeder chute and dribble chute openings function as NDOs for the bulk solids building. When the backup carbon adsorption system is in operation, the apron feeder chute and dribble chute will be sealed as indicated in Table 2. To minimize air emissions, Clean Harbors Aragonite will seal the apron feeder openings as much as is feasible.

The material from the apron feeder drops through a double set of flop gates before entering the kiln. To isolate the kiln from the apron feeder, only one set of flop gates is open at once. To further isolate the kiln from the apron feeder, a slide gate is located below the bottom flop gates. The slide gate only opens to allow the bottom flop gates to drop the material into the kiln. The chamber between the flop gates is equipped with a nitrogen purge system. This system is used when feeding material which has a potential of catching fire before entering the kiln. When the material is between the flop gates the chamber is purged with nitrogen so that the heat from the kiln will not ignite the material.

2.4 Small Sludge Tank

The small sludge tank (T-406) is a 5549 gallon tank used for receiving sludge waste from tankers and from other containers. The sludge material must have a flash point greater than 140°F, and must not be reactive. This tank has a large hinged door that covers a grizzly type grating for straining the sludge, and a smaller door for adding material from containers. Material from the large sludge tank (T-401) can be added to the tank via hard piping or a hose. This tank is vented to the incinerator through the combustion air system during normal operations. During backup operations (i.e., when the combustion air fans are off or the ABC temperature drops below 1400°F for more than ten minutes), the ventilation duct damper (HV4023) will remain open and the tank will be vented to the backup carbon adsorption system.

In-line LEL instruments monitor the hydrocarbon levels in the duct. The LEL instruments are tied to the WDPF. Inspection ports in the ducting must also be checked for dusting and liquid accumulation at least once per week.

The tank will comply with the Tank Level 2 controls specified in 40 CFR§264.1084(d)(3). Except when adding waste through the doors to the tank, all doors will be closed. They will be maintained so that there are no visible cracks, holes, gaps, or other open spaces. The doors must be closed as soon as possible (at least within 15 minutes) after unloading a truck or container into the tank. When it is necessary to add waste to the tank through the large tank lid, it should be maintained as closed as possible during the operation.

2.5 Backup Carbon Adsorption System

The carbon adsorption system includes an ID fan (K-401) which maintains the required draft to provide the necessary face velocity across the NDOs in the bulk solids building to capture VOCs and transport them to the carbon adsorbers. An in-line particulate filter prevents dust from clogging the carbon adsorber beds. The carbon adsorption system will vent fumes from the bulk solids building, the shredder, and the small sludge tank when it is in operation. The vent from the apron feeder will be closed and any venting of the apron feeder will be through the bulk solids building.

The carbon adsorption system will be in use during planned maintenance activities, and during emergency or unplanned maintenance activities where the ABC temperature is reduced to less than 1400°F for more than ten minutes or when the combustion air fans are off.

The backup carbon adsorption system includes two single stage carbon adsorbers in a parallel arrangement which are operated one at a time. The unit that is in use is the primary backup unit. The unit that is not in use will serve as a secondary backup. The unit serving as the secondary backup will be placed on-line before the carbon in the primary backup unit becomes exhausted. The exhausted carbon will be replaced in the primary unit and that unit will then serve as the secondary backup.

Each carbon adsorber will be filled with 4000 pounds of activated carbon. Each has a bed depth of 2.8 feet and a volume of 133 cubic feet. The type of carbon to be used will meet or exceed the requirements of the following specifications:

For reactivated carbon -- Calgon vapor phase react carbon (VPR 4x6 - 4x10)
For virgin carbon -- Calgon vapor phase BPL 4x6 - 4x10 carbon

The carbon will be replaced on a regular predetermined time interval that is less than the design carbon replacement interval based on the flow rates and VOC concentrations in the closed vent system. Only the hours that the carbon is actually in use are counted for determining when the carbon will be replaced. The actual number of hours that each carbon adsorber is in use (as well as which time period it is in) will be recorded in PI. If a carbon adsorber is used during both time periods (summer as well as other months) the time used will be prorated for each time period (e.g., if reactivated carbon with a summer replacement interval of 528 hours and a replacement interval of 888 hours for all other months were used for 264 hours during the summer and the rest of the time during the other months, the carbon would need to be changed after being used for 444 hours in the other months). June, July, and August are designated as summer months.

The spent carbon will be managed as a hazardous waste. Records of the dates the carbon is removed, placed into permitted storage, and treated will be maintained in the operating record.

The carbon adsorbers will be equipped with CO detectors for monitoring for hot spots in the carbon bed. The carbon adsorbers will be maintained in an inert nitrogen atmosphere while not in use. When idle, the carbon adsorbers will be isolated with dampers at the inlet and outlet (stack) to maintain the inert atmosphere and to minimize VOC emissions.

The carbon adsorption system ID fan and dampers will be configured to maintain the minimum required flow from the bulk solids enclosure as explained in section 2.1. Following each verification of the Procedure T enclosure using the backup carbon adsorption system, the appropriate carbon replacement intervals will be determined (based on the flow necessary to maintain the criteria for the permanent total enclosure and any changes in the VOC concentrations in the closed vent system). Any changes to the system which requires a higher flow rate than was previously determined will not be made until new carbon replacement intervals have been calculated and programmed into the system.

Aragonite will periodically measure the VOC concentrations in the closed vent system by sampling the exhaust at a location before the backup carbon units and analyzing the gas contents to verify that they remain similar to those used in the design analysis. These measurements shall be made at least annually and whenever requested by the Executive Secretary. If the periodic readings indicate that the VOC levels are higher than those used in the previous calculation of the carbon replacement interval, the carbon replacement interval will be recalculated and programmed into the system. Similarly, if the periodic readings indicate that the VOC levels are lower than those used in the previous calculation of the carbon replacement interval, the carbon replacement interval may be recalculated and programmed into the system.

The carbon replacement intervals (for both reactivated and virgin carbon during both summer and non-summer months) along with any supporting documentation (e.g., flow rate measurements, VOC measurements, etc.) and calculations will be certified by a Utah licensed professional engineer and submitted to the Executive Secretary within fourteen days of making any change to the carbon replacement interval.

3.0 Hydrocarbon Vent System

The hydrocarbon vent system collects fumes from nitrogen blanketed storage tanks and from processing units that may handle waste with a flash point less than 140°F. Normal operation is to collect fumes via piping and/or ducting and direct those fumes to the afterburner chamber. A blower and nozzle rated for pre-mixed fuel-air service will be used to input the fumes directly into the afterburner (ABC). In accordance with NFPA, a flame arrestor will separate the collection system from the ABC. The pre-mix blower and an air inlet valve will insure minimum flow velocity at all times to prevent flashback.

A second part of the hydrocarbon system is carbon canisters. These 55-gallon canisters are filled with carbon. There are primary and secondary carbon canister systems. The four primary canisters are sized to handle normal flow rates and the secondary canisters are sized to handle peak flow rates. Each system consists of a first-stage and second-stage contact of the vent air with carbon. The canisters can be used either in conjunction with the pre-mix blower or independent of the blower. The canisters are used on these occasions:

a) excess flow rate as determined by overpressure in the hydrocarbon vent system;
b) when the pre-mix blower, K-104, is off;
c) when the ABC temperature is less than 1400°F; and/or
d) when ABC O_2 is less than 2%.

The process flow is shown in drawing D-034-PF-604.

Temperature is monitored in the carbon system. Piping is installed to allow manual flooding on the carbon canisters with nitrogen if the temperature approaches auto ignition.

When fumes are directed to the carbon canisters, the fumes are monitored with a PID or equivalent every three hours. The sample ports are shown on drawing D-800-PI-316 in Attachment 10. Readings are taken from both primary and secondary headers and recorded on a logsheet at preset three hour intervals. A reading of 100 ppm or greater will indicate breakthrough. Aragonite will immediately replace (not to exceed 30 minutes) any carbon adsorption canisters in which breakthrough has occurred.

Condensation traps are also part of this system. The condensation traps are equipped with level sensors which alarm to the WDPF when approximately 1/3 full. The traps will also be manually checked for liquid accumulation at least once per week. The following sources are part of the hydrocarbon system.

3.1 Liquid Tank Farm

The twelve storage and four blend tanks report to the hydrocarbon vent system. All tanks are under a nitrogen blanket.

3.2 Decant Operations/Direct Burn Vessel/Direct Burn Tanker/Tanker to Tanker Transfer

The decant process is located in the decant building inside of E-4, container processing. Containers of liquids are decanted via the use of either a vacuum pump or a diaphragm pump to pull liquids from the container and transfer that liquid directly to the tank farm or a direct burn vessel. Air and vapors displaced by the vacuum pump or from the tank or vessel are directed to the hydrocarbon vent system.

Decanting of containers may also occur in the drive through direct burn station. Liquids are transferred from a container to a tanker by using the vacuum pump on the tanker. When the vacuum pump is used, the vacuum exhaust will be mixed with dilution air and directed to the closed vent system as described above in Section 2. When the backup carbon adsorption system is being used, no vacuum pump decanting from a container to a tanker occurs.

The direct burn vessel can be off-loaded by moving it to the truck unloading building and off-loading the material to the tank farm, or by pressurizing the vessel in building E-4 with nitrogen and forcing the liquid to the tank farm through the decant header, or the vessel can be moved to the direct burn pad and off-loaded to the incinerator with nitrogen pressure. Following off-loading of a direct burn vessel or direct burn tanker, any compressed nitrogen in the vessel or tanker will be relieved through the hydrocarbon vent system. Nitrogen and vapors displaced from filling a tanker during a tanker to tanker transfer are also directed to the hydrocarbon vent system.

3.3 Large Sludge Tank

The large sludge tank (T-401), is tied into the hydrocarbon vent system. This tank is nitrogen blanketed.

4.0 Other Vent Systems

There are other vent systems at Aragonite where waste is stored and/or sampled, but are not part of either the combustion air or the hydrocarbon system. There are three types of these systems: those that pass through a carbon system prior to discharge to the atmosphere, those that discharge directly to the atmosphere, and those that vent to the incineration system.

4.1 Carbon Systems

Carbon filters exist on the vent systems in E-5, the E-4 decant area, the E-4 repack area, and the E-2 repack area. Weekly inspections are conducted on each of the carbon filters. The inspection consists of checking to see if the carbon is free of impediments, verifying operability of the vent system, checking the carbon level, and checking for organic saturation. Saturation will be determined once a week by venting a container with volatile organic liquid and measuring the hydrocarbon concentration exiting the filters with a PID or equivalent. The carbon will be removed and ultimately incinerated when the reading goes over 500 ppm. These inspections will be documented and the log sheets will contain the area, date, inspectors name, material removed, operational status, carbon level, and hydrocarbon concentration. If carbon changeout is required, documentation that it was changed will also be provided. The profile number of the waste being vented through the system at the time of the inspection will also be noted on the inspection form.

4.1.1 Container Sampling

Containers are sampled under fume exhausters in building E-5 and bays 1 and 6. These exhausters have a fan to pull air off the top of the container. The discharge is to carbon filters on the north side of building E-5. Containers are closed as soon as possible after sampling.

4.1.2 Repack Operations

Repack operations occur at the three workstations in building E-2 and the repack area in building E-4. Each workstation and the E-4 repack area is supplied with point source ventilation for the capture of fumes from the repack operations. No container processing will occur at a workstation or the E-4 repack area unless the ventilation system for that particular area is operating. In order to ensure adequate capture velocities, any container that is open in the workstations will be no more than 3 feet from the ventilation hood in workstation 3 or no more than 2 feet from the ventilation hood in workstations 1 or 2. This requirement is only applicable for lab packs when the inner container(s) are opened. The ventilation air from each workstation is pulled by a fan located external to E-2 on the west side of the building. The air from the fan passes through carbon filters before being discharged to the atmosphere. For the E-4 repack area, a fume exhauster is used to pull air from the work room's area to a carbon filter and then to a roof ventilator on top of building E-4.

4.1.3 Decant Operations

The container decant room is in the container processing building, E-4. Liquid is removed from containers and pumped to either the tank farm or direct burn vessel. A fume exhauster pulls across the top of a drum while liquid is removed to the tank farm or to a direct burn vessel. The ventilation of the fumes is to a carbon filter and then to atmosphere at the roof of E-4.

4.2 Discharge to Atmosphere

4.2.1 Container Storage and Staging

Container storage occurs in the buildings designated as E-1, E-2, E-3, E-4, E-5, E-6, and E-7. Staging containers for processing (feed to the kiln, repacking, decanting, and/or shredding) occurs in building E-4.

Fumes are not expected in these areas since containers are kept closed. The buildings have ventilation systems designed to meet the air exchanges specified in the Uniform Building Code (UBC).

4.2.2 Tanker Unloading

The tanker unloading building ventilation meets Uniform Building Code requirements for air exchanges. Waste is exposed to atmosphere only when a sample of the truck load is taken. Pumps are used to unload liquid tankers. The contents of these tankers report to the liquid tank farm.

4.2.3 E-5 Fingerprint

Anytime there are waste samples/chemicals present in an E-5 fingerprint area fume hood, the fume hood is exhausted to the atmosphere above E-5. The fume hoods in the E-5 fingerprint area meet all applicable NFPA requirements.

4.3 Vents to Incineration System

The chute of the deslagger is vented back to the ABC to minimize the release of steam and other emissions. A duct leads from the top of the deslagger chute to the ABC and fumes are drawn into the incinerator by the fan in the duct. Two eductors vent to ports in the south side of the afterburner. The first is the vent from the top of the glove box in the cylinder feed station. An eductor draws a vacuum of 1-2" WC on the glove box and exhausts it to the afterburner. This glove box is only used during emergencies to manage leaking cylinders and will not be used routinely to empty cylinders. A second eductor vents the drum pumping station glove box. Compressed air to the eductor draws a vacuum of 1" WC in the glove box. If compressed air to the eductor cannot be maintained, the system will automatically switch to nitrogen to continue venting the glove box.

Table 1 -- NDOs During Normal Operations

Opening Description	Dimensions	Size (in^2)	Comments
North Roll Up Door (10'x16')	½" x 32'	192	Gap around door edge
Middle Roll Up Door (10'x16')	½" x 32'	192	Gap around door edge
South Roll Up Door (10'x16')	½" x 32'	192	Gap around door edge
North Roll Up Door (10'x16')	½" x 10'	60	Gap at top of door
Middle Roll Up Door (10'x16')	½" x 10'	60	Gap at top of door
South Roll Up Door (10'x16')	½" x 10'	60	Gap at top of door
Man door 3'x7' (shredder feed chute)	⅛" x 17'	25.5	Gap around door
Man door 3'x7' (shredder feed chute)	⅛" x 3'	4.5	Gap under door
Man door 3'x7' (crane bay)	⅛" x 17'	25.5	Gap around door
Man door 3'x7' (crane bay)	⅛" x 3'	4.5	Gap under door
Shredder Camera Opening	6" x 6"	36	Opening into shredder
Shredder Camera Light Opening	6" x 6"	36	Opening into shredder
Shredder Side Access Door	4 x 36" x ¼"	36	Gaps around door edges
Shredder Area Clean Up Door	2 x 12" x ¼"	6	Gaps around door edges
Shredder Drum Dump Door	42" x 12" + ½" x 31"	519.5	Gaps around the seal plate: Two triangular openings on east and west sides of door; each with a base of 42" and altitude of 12" and one rectangular opening of 31" x ½" at bottom of door
Shredder Ram Access Door	2 x (28" + 28½") x ¼"	28.3	Gaps around door edges
Shredder Chute Cleanup Doors	((18" x 2 + 52" x 2) + 2 x 4 x 19") x ½"	146	Gaps around edges of doors: Two side doors - 19" x 19" One front door - 52" x 18"
Dribble Chute	21" x 21"	441	At first flange
Apron Feeder Feed Chute	72" x 24"	1728	At bottom of chute
Dribble Feeder Chute Door	2 x (24" + 24") x ½"	0	Not part of enclosure
TOTAL		3792.8 (26.3 ft^2)	

Table 2 -- NDOs During Backup Operations

Opening Description	Dimensions	Size (in^2)	Comments
North Roll Up Door (10'x16')	½" x 32'	192	Gap around door edge
Middle Roll Up Door (10'x16')	½" x 32'	192	Gap around door edge
South Roll Up Door (10'x16')	½" x 32'	192	Gap around door edge
North Roll Up Door (10'x16')	½" x 10'	60	Gap at top of door
Middle Roll Up Door (10'x16')	½" x 10'	60	Gap at top of door
South Roll Up Door (10'x16')	½" x 10'	60	Gap at top of door
Man door 3'x7' (shredder feed chute)	0	0	Gap around door, sealed
Man door 3'x7' (shredder feed chute)	0	0	Gap under door, sealed
Man door 3'x7' (crane bay)	0	0	Gap around door, sealed
Man door 3'x7' (crane bay)	0	0	Gap under door, sealed
Shredder Camera Opening	0	0	Sealed with Visqueen and duct tape
Shredder Camera Light Opening	0	0	Sealed with Visqueen and duct tape
Shredder Side Access Door	4 x 36" x ¼"	36	Gaps around door edges
Shredder Area Clean Up Door	2 x 12" x ¼"	6	Gaps around door edges
Shredder Drum Dump Door	0	0	Sealed with Visqueen and duct tape
Shredder Ram Access Door	0	0	Sealed with duct tape
Shredder Chute Cleanup Doors	0	0	Sealed with duct tape
Dribble Chute	21" x 21"	0	Cover over opening
Apron Feeder Feed Chute	0	0	Cover over opening
Dribble Feeder Chute Door	0	0	Gap around door edge, sealed
TOTAL		798 (5.5 ft^2)	